

Massachusetts Department of Public Health

1998 Annual STD Report

Division of Sexually Transmitted Disease Prevention

MASSACHUSETTS DIVISION OF STD PREVENTION

EXECUTIVE SUMMARY

Epidemiological trends for the past nine years (1990 through 1998) have shown dramatic decreases in incidence rates of STD in Massachusetts. Overall progress has been steady, with some exceptions in certain geographic areas where progress was slower and less dramatic than the statewide trends. For some specific STD, such as chlamydia, there has been an increase in reported disease in both 1997 and 1998. In 1998, 8,363 cases were reported, although 17% below the 1989 (10,131)-peak level of reported cases, is 14% greater than the 1997 reported cases (7,330). The STD Division notes that the increased chlamydia reporting can be attributed to increased screening of women to detect asymptomatic disease as recommended by the Division. In addition, our collaboration with the Family Planning Clinics through the Infertility Prevention Project has contributed to this increase.

Evaluation of recent national and regional morbidity trends indicates that STD declines have now reached an equilibrium point and may rise in high-risk populations. For example, specific increases in reported gonorrhea in a number of states during the past three years may signal a reverse trend in teen and young adult (age 15-24) STD rates. In Massachusetts in the second half of 1998, an increase in gonorrhea centered in that age group was detected. The 2,258 cases of gonorrhea reported in 1998, is 9% above the reported 2,077 cases in 1997. It is important to note, however, that the 1997 reported cases of gonorrhea was the lowest number of reported cases of gonorrhea since 1959.

Efforts to continue reductions in STD morbidity will require intensive disease intervention strategies focused on difficult-to-reach adolescents and young adults in social and economically deprived communities. These community-based disease prevention programs will require a comprehensive public-private partnership to effectively promote health-seeking and health-promoting behaviors.

Progress Toward Year 2000 Goals

Chlamydia rates declined 32% from 204 cases per 100,000 population in 1990 to 139 cases per 100,000 population in 1998, remaining **below the *HEALTHY PEOPLE 2000* objective** of 140 cases per 100,000.

Gonorrhea rates declined 70% from 125 cases per 100,000 population in 1990 to 37 cases per 100,000 population in 1998, **63% below the National *HEALTHY PEOPLE 2000* objective** of 100 cases per 100,000.

Lesion syphilis (P&S) declined 96% from 11.6 cases per 100,000 population in 1990 to 0.76 cases per 100,000 population in 1998, **80% below the *HEALTHY PEOPLE 2000* objective** of 5 cases per 100,000.

Table: Massachusetts Priority STD Morbidity Trends by Year
1990 - 1998

Disease	1990	1991	1992	1993	1994	1995	1996	1997	1998
Infectious syphilis	1175	1013	700	440	278	223	262	187	150
Congenital syphilis	14	5	6	6	6	2	7	1	6
Gonorrhea	7531	5984	3580	3099	3156	2658	2163	2077	2258
Chlamydia	12251	10891	9804	8333	8049	7402	6791	7330	8363
PID Total	702	623	504	486	468	318	204	166	198
Chancroid	27	2	13	2	1	7	2	4	0

It is important to note the risk of acquiring a sexually transmitted infection is not equally distributed across all sexually active populations. The degree of risk varies dramatically between individuals and groups depending on age, race and socioeconomic status. The number of at-risk individuals in low socio-economic communities, particularly adolescents, indicates that more needs to be done to reduce the risk of acquiring a STD among exposed populations. It is particularly important for clinicians to provide assurances of confidentiality for their adolescent clients when discussing sexual issues.

The Division of STD Prevention has a trained, caring and experienced staff and up-to-date resources for the task of preventing and controlling STDs. Disease control and prevention services including programs promoting and supporting safer behaviors are acutely needed for adolescents and young adults and especially so for minority communities. Public-private partnerships involving community groups, medical providers and public health agencies are essential for community based prevention to occur. The problems posed by community-based prevention require STD programs to embrace a new paradigm in the delivery of STD services. This involves an understanding of diverse populations and viewpoints; social, behavioral, and cultural influences and patterns; and a willingness to cooperate, collaborate, and communicate. The STD Division welcomes the opportunity to become partners with interested and concerned groups and individuals to continue our progress toward making STDs a problem that affects as few people as possible. Hopefully, this report will convey our attempts to address the recommendations of the 1996 Institute of Medicine (IOM) report, "The Hidden Epidemic: Confronting Sexually Transmitted Diseases."

THE ROLE OF DISEASE REPORTING



Where do the numbers come from?

State law requires physicians to report sexually transmitted diseases. Providing accurate and complete information when reporting is crucial for the validity of the data. Cases must be reported directly to the Division of STD Prevention to assure confidentiality and efficiency. The reportable infections include syphilis, gonorrhea, chlamydia, ophthalmia neonatorum, neonatal herpes, chancroid, granuloma inguinale, lymphogranuloma venereum (LGV), pelvic inflammatory disease (PID) and genital warts.

Reporting enables the Division to monitor STD trends and outbreaks, identify areas of high morbidity, focus prevention efforts on at-risk communities and assure that infected individuals are appropriately treated. In Massachusetts, the extent of under-reporting of disease, particularly clinically diagnosed diseases such as PID, is unknown. Data suggests under-reporting is disease-specific. Laboratory surveys indicate that approximately 90% of confirmatory syphilis tests are performed by the State Laboratory Institute. Thus, syphilis case reporting is fairly complete. In contrast, an automated reporting system recently established between the Division and a major microbiology laboratory serving a health maintenance organization (HMO) increased that HMO's chlamydial reporting six-fold (the case definition for chlamydia is a positive laboratory test).

While confidentiality is a most important issue in STD surveillance, the question of data bias in the system must be addressed. The Division supports specialized STD clinics through 12 contracts with health care providers in strategically located sites throughout the state. These clinics assure access to skilled STD care in high morbidity areas in the state. These public funded clinics may lead to the assumption that socio-economically-deprived communities are covered by a more efficient surveillance system. However, the Division does not rely on clinician reporting alone. Laboratory reporting of significant findings is also accepted, thereby capturing cases unreported

by clinicians. In 1998, 68% of syphilis, 72% of gonorrhea and 80% of chlamydia were reported from the private sector. Analysis of chlamydia reporting by laboratories in 1996 indicates no significant difference in reporting patterns by race/ethnicity for laboratory versus provider reporting.

Calculation of Rates

All population-based rates are calculated on the basis of the 1990 United States Census data for Massachusetts. Using reported morbidity by age, gender, race and ethnicity when specified, rates per one hundred thousand are calculated. Data for race and ethnicity are compiled using the reported cases for which data are available. If non-specified demographic information was included and apportioned to categories according to the distribution of morbidity, absolute numbers would increase, rates would sometimes be higher, but relative differences would remain the same.

Syphilis Elimination Program

An important goal in our STD Prevention program “**Lesion Free in 2003**” is a program to eliminate infectious syphilis. One of the core elements is an increasingly efficient syphilis screening, treatment and follow-up program in both state prison and county correctional facilities. All of the syphilis testing was performed at the State Laboratory Institute at no cost to the Department of Corrections. In 1997, when the Division performed 7,994 serologic tests for syphilis among state prison inmates 8.4% of female and 4.9% of male inmates were found to have a positive screening test. In 1998, 6,754 serologic tests for syphilis for state prison inmates resulting in 6.4% of female and 3.9% of male inmates being found to have a positive screening test.

In 1997, the Division performed 17,727 serologic tests for syphilis in county jails resulting in 8.5% of female and 3.2% of male inmates being found to have a positive screening test. In 1998, 19,899 serologic tests for syphilis resulted in 6.5% of female and 2.5% of male inmates being found to have a positive screening test. Our current system of screening inmates permits us to affect the burden of disease at the community level while at the same time preventing unnecessary treatment of false positive or previously known cases of syphilis.

State Prisons: 1998

RPR:	Reactive	Nonreactive	Total	Confirmed Positive MHA-TP: Reactive
Males	202	5,140	5,390	103
Females	87	1,362	1,364	64

County Jails: 1998

RPR :	Reactive	Nonreactive	Total	MHA-TP: Reactive
Males	444	17,891	18,543	196
Females	83	1,270	1,356	63

DISEASE TRENDS

During the past six years the decreases in incidence rates of STD in Massachusetts has been most dramatic in minority groups, but the risk for acquiring STDs continues to be higher for black and Latino populations than for whites. For blacks in 1998, the rate per 100,000 population for all syphilis was more than 79 fold higher (80 vs. 1). The rate for gonorrhea was 34 fold higher (271 vs. 8), and rate for chlamydia was 17 fold higher (626 vs. 33) than for whites. For Latinos in 1998, the rate per 100,000 population for syphilis was more than 59 fold higher (60 vs. 1). The rate for gonorrhea was 12 fold higher (106 vs. 8) and the rate for chlamydia was 15 fold higher (539 vs. 33) than for whites.

Massachusetts STD Morbidity for Age 15-19

Rate per 100,000 reported by Gender/Race/Ethnicity

Gonorrhea	Year	White male	Black male	Latino male	White female	Black female	Latina female
	1994	8	615	157	44	1403	412
	1995	8	532	164	36	1318	290
	1996	9	410	250	34	1525	500
	1997	5	509	186	38	1226	419
	1998	6	349	272	45	1318	421
Chlamydia	1994	12	577	199	299	3595	3123
	1995	15	463	221	310	3725	3139
	1996	24	509	378	334	3917	3359
	1997	18	676	364	316	3679	2940
	1998	17	600	492	192	3840	3669
Syphilis	1994	0	53	29	1	92	22
	1995	0	8	0	0	15	51
	1996	0	23	14	3	4	7
	1997	0	15	21	1	23	29
	1998	0	8	15	0	15	50

As seen in the table above, the data by age, gender and race/ethnicity indicates that **minority youth are at highest risk** for STDs. For 15-19 year old black males in 1998, the rate of syphilis was more than 8-fold higher than white males (8 vs. <1). The rate for gonorrhea was 42-fold higher (349 vs. 6), and the rate for chlamydia was 34-fold higher (600 vs. 17) than for whites males 15-19 years old. A similar comparison can be made for Latinas age 15-19. The rate of syphilis in 1998 was 50 fold higher for Latinas than white females (50 vs. <1). The rate for gonorrhea was 9 fold higher (421 vs. 45), and the rate for chlamydia was 8- fold higher (3669 vs. 192) than for white females 15-19 years old.

SYPHILIS GONORRHEA CHLAMYDIA RATE1/100000 BY AGE

SYPHILIS GONORRHEA CHLAMYDIA CASES BY GENDER

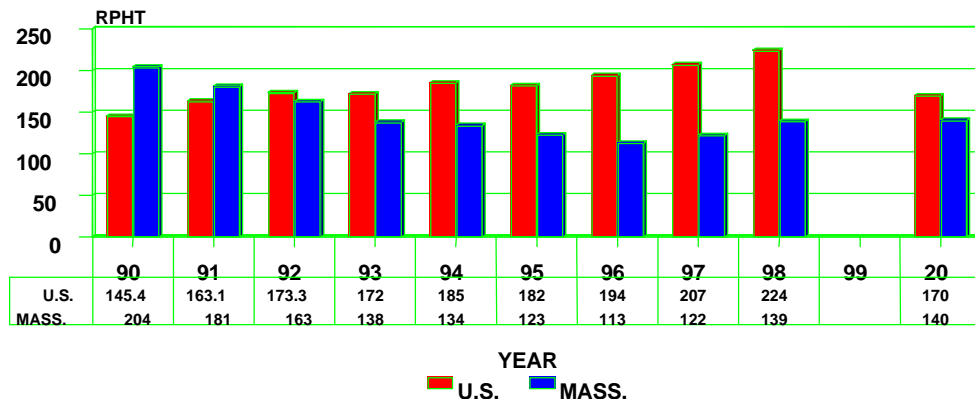
Syphilis Gonorrhea Chlamydia by Race/Ethnicity

M

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PROGRESS TOWARDS OBJECTIVES

CHLAMYDIA CASE RATE
HEALTHY PEOPLE 2000 OBJECTIVE



SYPHILIS

Syphilis is caused by a corkscrew-shaped bacterium called *Treponema pallidum*. It does not live or cause disease outside the human body and it is spread from person to person through direct contact with an infectious lesion. The spirochetes pass through intact mucous membranes and

abraded skin; they are then carried by the blood stream to every organ in the body.

Primary syphilis is the most infectious stage of the disease. The first clinical sign is the chancre, or lesion. The lesion appears at the site of inoculation (21 days average), and is highly infectious, and the lesion resolves without treatment. Primary lesions are not confined to the genital area; they may be seen on the lips, tongue, tonsil, nipple, fingers, and anus depending on sexual practices. Without treatment, the chancre will heal completely within 1 to 5 weeks (3 weeks average). If the lesion has been present > 10 days, nearly all serologic tests will be reactive. The diagnosis of **secondary syphilis** is suspected primarily on the basis of the skin and mucous membrane lesions. The skin lesions are symmetrical and may be macular, papular, follicular, papulosquamous, or pustular. Moist papules occur most frequently in the anogenital region (condylomata lata) and the mouth. Lesions of the mouth, the throat, and the cervix (mucous patches) frequently occur in secondary syphilis, as does generalized lymphadenopathy. Symptoms of secondary syphilis may last 2 to 6 weeks (4 weeks average) and may recur in untreated or inadequately treated patients.

Latent syphilis is the stage in which no observable clinical signs or symptoms are present to suggest infection, yet the serologic tests for syphilis is reactive. All cases of syphilis are latent at some time during the course of an untreated infection. The **early** latent stage of syphilis is defined as latent disease within the first year after infection. In early syphilis, any period during which primary or secondary symptoms are absent is classified as latent. When more than a year has passed since the patient became infected and there are no signs of disease, we define this period as **late latent**. An **untreated pregnant woman** may transmit syphilis to the fetus regardless of the duration of her disease; transmission is more likely in primary, secondary, and early latent stage than in late latent. Infants born to infected untreated mothers in the secondary stage of infection are almost always infected, conversely, infants born to women with late syphilis may be uninfected. If the mother becomes infected late in the pregnancy, she may show no signs before delivery, and the infected newborn may also appear normal at birth. If a woman has untreated syphilis at delivery, it must be assumed that the infant is infected and must be treated. Adequate treatment for the mother early in pregnancy prevents infection of the fetus. In untreated **late syphilis**, signs and symptoms range from inapparent to symptoms that indicate severe damage to one or more body systems. Late syphilis, also referred to as tertiary syphilis, can be classified as neurosyphilis, cardiovascular syphilis, and late benign syphilis. About ten percent of persons with untreated syphilis develop late syphilis.

Benzathine Penicillin (Bicillin) IM, is the recommended treatment for syphilis. A complete set of 1998 STD Treatment Guidelines are available through the STD Division. **Always screen patients for multiple STDs.**

GONORRHEA

In 1997, 324,901 cases of gonorrhea were reported in the United States. In 1998 2,258 cases were reported in Massachusetts. Overall rates are somewhat higher in men and adolescents (15-19 years old) have the highest rates both nationally and in Massachusetts.

In 1879, Albert Neisser demonstrated the etiologic agent, *Neisseria gonorrhoeae*, in stained smears of urethral, vaginal, and conjunctival exudates. Most gonococcal infections remain localized at the site(s) of initial inoculation. Approximately 80 percent to 90 percent of infections remain uncomplicated when patients are treated promptly, but complications develop frequently in patients who do not receive prompt, effective therapy. The gonococcus grows best in warm, moist, nonacid columnar or transitional epithelium (such as the urethra, cervix, rectum and pharynx).

A man's risk of acquiring a urethral infection after a single episode of vaginal intercourse with an infected woman is about 20 percent, but the risk rises to 60 to 80 percent after four exposures. In women who have multiple exposures to men with gonorrheal urethritis, the prevalence of infection is 50 to 90 percent. The risk of transmission from male to female from a single exposure is higher than from female to male.

Symptoms and behavior also influence the transmission of gonorrhea. Most men and women who acquire symptomatic gonorrhea will seek treatment. Many women are asymptomatic or only mildly symptomatic and are less likely to seek treatment, which leads to complications such as pelvic inflammatory, ectopic pregnancy, infertility, or chronic pelvic pain. Because of the acute and long-term manifestations of PID, this complication has great impact on public health prevention programs. This is why it is so important to motivate all partners of gonorrhea patients to get an examination and treatment.

The average incubation period is 3 to 5 days, but may range from 0 to 30 days. In men, symptoms include a scanty to profuse mucopurulent discharge, usually with painful and frequent urination. The endocervical canal is the primary site of gonococcal infection in women. The incubation period is uncertain and seems more variable than in men. Most women infected with the gonococcus remain asymptomatic. Women who develop local symptoms do so within 10 days of infection. The most common symptoms in women include increased vaginal discharge, dysuria, and intermenstrual uterine bleeding. Signs and symptoms in women with gonorrhea are sometimes difficult to assess because of the prevalence of coexisting infection with *Chlamydia*, *Trichomonas*, *Candida*, *Bacterial Vaginosis*, herpes simplex, or other organisms. All women should be screened for both gonorrhea and chlamydial when infection is suspected. The symptoms of gonorrhea during pregnancy are basically the same as in non-pregnant women except that PID is less common.

Ceftriaxone by intramuscular injection is the recommended treatment for gonorrhea. A complete set of 1998 STD Treatment Guidelines are available from the Division of Sexually Transmitted Disease Prevention. **Always screen patients for multiple STDs.**

CHLAMYDIA

In 1998, 8,363 cases of chlamydia infection were reported in Massachusetts. In the United States, 526,653 cases were reported in 1997 from 49 states.

Chlamydiae are unique microorganisms. Like viruses, chlamydiae grow only intracellularly.

Unlike viruses, however, chlamydiae contain both DNA and RNA and divide by binary fission. *Chlamydia trachomatis* causes a diverse group of genital and neonatal infections.

In men, *C. trachomatis* may be responsible for 50 percent of cases of **nongonococcal urethritis** (NGU), a STD with an estimated incidence 2.5 times that of gonococcal urethritis. Chlamydia is also responsible for approximately 50 percent of the cases of acute epididymitis seen annually in the United States. Many chlamydia infections of the urethra in men are asymptomatic. The average incubation period is 7 to 21 days. In men, symptoms include a scanty mucoid to watery discharge, usually with painful and frequent urination. NGU can be diagnosed in a male patient if tests for gonorrhea are negative and if the patient has objective evidence of urethritis. The objective evidence includes a visibly abnormal discharge, pyuria defined as more than 10 **polymorphonuclear leukocytes** (PMN) per high dry field in the sediment of a first-voided urine specimen, or more than four PMN per oil immersion field in a gram-stained urethral smear.

Chlamydia infections in women are even more significant. *C. Trachomatis* plays an important role in causing **mucopurulent cervicitis** (MPC), acute PID, and maternal and infant infections during pregnancy and following delivery. Infection is frequently asymptomatic, which can lead to complications such as pelvic inflammatory disease, ectopic pregnancy, infertility, and chronic pelvic pain.

Infants whose mothers are infected can acquire a chlamydia infection at birth from contact with infected vaginal secretions. These newborns are at high risk of developing inclusion conjunctivitis and pneumonia. Chlamydia is the most common cause of neonatal eye infections and afebrile interstitial pneumonia in infants under 6 months of age.

The severe impact of sexually transmitted chlamydia infections, in both human and economic terms, has prompted increased linkages nationally between STD, family planning, and other providers to expand the availability of laboratory screening and clinical treatment services to women. This program began in the Pacific Northwest (US Public Health Service Region 10) in the late 1980's. Since then, the prevalence of chlamydia in that area has declined more than 50%. The screening program began in Massachusetts in 1996, so it is too soon to present trend information.

Azithromycin is the recommended treatment for chlamydia. A complete set of 1998 STD Treatment Guidelines are available from the Division of Sexually Transmitted Disease Prevention. **Always screen patients for multiple STDs.**

HISTORY OF THE DIVISION OF SEXUALLY TRANSMITTED DISEASE (STD) PREVENTION

In 1937, the Massachusetts State Legislature established a Venereal Disease (VD) Division as a branch of the Preventive Medicine Department. Its major purpose was to establish strategically

located state-cooperating clinics throughout the Commonwealth, aimed specifically at STD prevention and control. The Division was created because of the recognition that complex behavioral and social factors had to be acknowledged and addressed for effective STD prevention and control.

Initially there were 23 clinics placed in hospitals and staffed by public health nurses. Through the years there have been changes in the program, primarily attributable to shifts in the morbidity and complexity of disease, client services, population and economics. In addition, the emergence of the human immunodeficiency virus (HIV) has warranted an expansion of the role of the STD clinic to an STD/HIV clinic. The Division, through its contracted clinics, continues to ensure that high quality, experienced and sensitive clinical, diagnostic, treatment and prevention services are available regardless of age, race, sex, ethnicity, or ability to pay. The VD Division was renamed the Sexually Transmitted Disease (STD) Prevention Division and placed in the Bureau of Communicable Disease Control of the Department of Public Health. The Central Offices of the Division and the Bureau are at the Massachusetts State Laboratory Institute, Jamaica Plain. The STD Clinic contracts were renewed in 1997, and some changes were required as a result of that process.

Clinic Visit Data, January 1 - December 31, 1998

Clinic	Total Visits	New Visits	Repeat Visits	Males	Females	Minors	Pregnant
Baystate	1599	1197	402	880	719	251	10
Berkshire	803	230	573	414	389	532	3
Boston Medical	4538	3721	817	2590	1948	37	14
Brockton	1529	885	644	889	640	37	14
HealthQuarters	1103	676	427	643	460	130	2
Holy Family	1975	1141	834	911	1064	119	245
Lowell HC	652	380	272	405	247	13	2
MGH	5773	3338	2435	3675	2098	14	1
MCI-Fram	1734	759	975	Na	1734	13	38
Planned Parent	1075	728	347	407	668	67	6
SSTAR	112	626	486	611	501	66	16
Tapestry	1041	655	386	456	585	82	9
TOTAL	22,934	14,336	8,598	13,692	11,053	1,361	346

STD PROGRAM SERVICE ELEMENTS

The Division of STD Control has five major service areas:

1) **Clinical Services.** The Division supports specialized STD clinical services through 12 contracts and one subcontract. The clinics (5 in hospitals; 4 in community health centers; 3 in family planning/planned parenthood clinics; and one in the women's prison in Framingham) are located throughout the state (a list is attached). The clinics offer comprehensive STD exams, testing and treatment if appropriate. Each clinic also offers confidential HIV counseling and testing as a part of the service. The clinics are run by nurses. All operate on a walk-in basis, and everyone who registers will be seen at that session.

2) **Laboratory Services.** The diagnostic and therapeutic services of the clinics are supported by laboratory services at the State Laboratory Institute. The State Laboratory also offers selective screening and confirmatory STD testing to medical providers throughout the state. Screening of high-risk populations (such as new admissions to state prisons and county jails) contributes to case finding and disease intervention.

3) **Epidemiology.** The Division field staff, disease intervention specialists (DIS), are available to any medical provider in the State. The DIS, with the cooperation of patient and provider, will assure treatment and interview clients diagnosed with infectious syphilis and other priority diseases (including HIV) to locate the source of the current infection, as well as those who may subsequently have been exposed. These well-trained field epidemiologists will then try to locate each named partner and inform them (discreetly and anonymously) of their exposure, impress upon them the need for an evaluation and early intervention services for a possible infection, provide information about where such services are available, and provide focused, risk-reduction counseling to prevent future exposures. This process of eliciting the names and location of partners is based on a sense of trust that the information divulged is protected and the source(s) will never be identified. STD Division policies as well as state law protects these records from release. **Protection of confidentiality is the cornerstone of the STD Division's program.**

4) **Surveillance.** The Division utilizes two tracks of disease surveillance. Reporting by the diagnosing physician is required by law. In addition, laboratories are responsible for reporting significant lab findings to the Communicable Disease Bureau for further evaluation. These reports go directly to the Division either on a provided form or electronically. This data is compiled for epidemiologic follow-up (when necessary) by the DIS, and is also used as a measure of success of prevention initiatives. The data is used to help decide how and where resources and personnel can be most effectively used.

5) **Education.** The Division develops and/or provides teaching materials (films, slides, brochures, factsheets, etc.) which not only address STDs but other timely topics such as self-esteem and sexual negotiating skills. These materials are available for professional and public groups. We also serve as a speaker's bureau, so that any group wishing to learn more about STDs (including HIV) may request a speaker for that purpose.

STD/HIV PREVENTION TRAINING CENTER OF NEW ENGLAND

The STD/HIV Prevention Training Center of New England is a project of the Division of STD

Prevention funded by a grant from CDC. The PTC is responsible for post-graduate clinical and laboratory training's in New England. In 1998 we provided 265 hours of clinic and laboratory based teaching, and have trained 137 medical providers in the field of STDs. In addition, the PTC produced in October 1998 a National Teleconference on the topic of Pelvic Inflammatory Disease that was attended by over 5,000 participants throughout the United States. The PTC faculty has lectured extensively on various STD topics throughout the New England States.

SUMMARY OF THE STD LABORATORY TESTING SERVICES

a) Syphilis 1995-1998

Screening RPR:	1995	1996	1997	1998
Reactive	6,702	6,108	5,713	5,080
Nonreactive	44,454	44,007	39,298	39,521
Unsatisfactory	282	431	392	337
Total	51,438	50,546	45,403	44,938
MHA-TP: Confirmatory				
Reactive	3,921	3,551	3,560	3,022
Nonreactive	2,731	2,448	2,122	2,135
Total	6,652	5,999	5,682	5,157

b) Gonorrhea testing 1998

Q1/98	GC Isolated	Not Isolated	Unsatisfactory	Total	% pos.
Female	32	1048	42	1122	
Male	60	1276	38	1374	
Total	92	2324	80	2496	3.8%
Q2/98	GC Isolated	Not Isolated	Unsatisfactory	Total	
Male	51	1362	38	1451	
Female	22	1097	33	1152	
Total	73	2459	71	2603	2.9%
Q3/98	GC Isolated	Not Isolated	Unsatisfactory	Total	
Male	78	1425	24	1527	
Female	29	1200	24	1253	
Total	107	2625	48	2780	4.4%
Q4/98	GC Isolated	Not Isolated.	Unsatisfactory	Total	
Male	69	1339	37	1445	
Female	24	1056	49	1138	
Total	93	2404	86	2583	3.7%

c) Chlamydia 1997 Female testing only-1998 expanded

	+ TEST	- TEST	Unsatisfactory	Total	% Pos.
Q197	55	1069	47	1171	4.9
Q297	46	1054	69	1169	4.2

Q397	73	1349	71	1493	4.9
Q497	86	1389	80	1555	5.8
Q198	+ TEST	- TEST	Unsatisfactory	Total	% Pos.
Male					
Female	105	1408	85	1598	
Male Urine					
Female Urine					
Total	105	1408	85	1598	6.9%
Q298					
Male	1	3	1	5	25%
Female	74	1347	94	1514	5.2%
Male Urine					
Female Urine					
Total	75	1350	95	1519	5.2%
Q398					
Male	4	19	0	23	17.4%
Female	95	1492	88	1675	6%
Male Urine					
Female Urine					
Total	99	1511	88	1698	6.5%
Q498					
Male	13	53	0	66	19.7%
Female	76	1403	65	1544	5.1%
Male Urine					
Female Urine					
Total	89	1456	65	1610	5.8%

Urine based chlamydia screening to begin in 1999

d) Chancroid by Quarter, 1996 - 1998

	Jan-Mar	Apr-Jun	July-Sep	Oct-Dec	Totals
1996	0	2	0	0	2
1997	1	3	0	0	4
1998	0	0	0	0	0

e) Syphilis screening in correctional facilities

State Prisons: 1997

RPR Reactive Nonreactive Total **MHA-TP: Reactive**

males	316	6127	6443	202
females	117	1269	1386	45

County Jails: 1997

RPR	Reactive	Nonreactive	Total	MHA-TP: Reactive
males	535	16,125	16,660	232
females	91	976	1,076	52

State Prisons: 1998

RPR:	Reactive	Nonreactive	Total	MHA-TP: Reactive
males	202	5,140	5,390	103
females	87	1,362	1,364	64

Confirmed Positive

County Jails: 1998

RPR :	Reactive	Nonreactive	Total	MHA-TP: Reactive
males	444	17,891	18,543	196
females	83	1,270	1,356	63

HIV TESTING AND COUNSELING

	Q1/98	Q2/98	Q3/98	Q4/98	Total
No. Counseled	1719	1563	1632	1467	6321
No. Tested	1547	1360	1415	1327	5649
No. Positive	11	6	11	7	35
% Positive	0.71	0.44	0.78	0.53	0.62

HIV testing is voluntary in STD clinics, blinded surveys of syphilis tests in three STD clinics indicates the prevalence of HIV is 2.5%.

HIV/STD: ASSOCIATION AND INTERACTION

Sexual contact is the most important mode of transmission of the human immunodeficiency virus (HIV). The association of HIV infection with other sexually transmitted diseases (STD) is obvious. Clearly, the risk behaviors that lead to STD transmission are the same, which enable HIV transmission. It is appropriate to use the presence of STD's as a surrogate for HIV infection risk and such use is a valuable tool for epidemiologic and policy development purposes.

The STD/HIV connection is, however, much more than a parallel association. The interaction is more complex and insidious. STD's and HIV infection are co-facilitators. The presence of genital ulcers, discharges or erosion of mucus membrane as a manifestation of STD may be the most important single co-factor in sexual transmission of HIV in many parts of the world. The immunological impairment caused by HIV infection plays a clear role in facilitating transmission of other STDs, worsening manifestations and making response to therapy less successful than expected. More extensive and difficult to treat STD's cause prolonged ulcerative and inflammatory lesions, leading to wider dissemination of STD's. More extensive lesions and spread of STD's lead to more efficient transmission of HIV infection. The potential of such a vicious

cycle of infection can lead to the amplification of both STD's and HIV infection in a population.

The evidence that STD's are an important facilitator of HIV transmission come from studies done in the U.S. and other parts of the world. These studies are being augmented by more and more data, which suggest that the presence of STD is an independent risk factor for HIV transmission.

A recent article in Scientific American, "Sexually Transmitted Diseases in the AIDS Era" reviews the epidemiology of STD's in the U.S. and discusses the social conditions which fuel the epidemic.

The same populations which are experiencing the STD epidemic are currently disproportionately affected by HIV infection and are experiencing the most rapid increases in infection with HIV.

The authors conclude that a balanced public health STD program is needed for high-risk populations and efforts to prevent and control AIDS and STD's must be coupled with the identification and correction of societal factors. It also has become clear that HIV infection and STD's are not only associated by shared risk behaviors, but are also essentially interactive risk factors. Thus, it is now generally concluded that STD genital ulcer control should be an integral part of AIDS prevention programs.

PARTNER NOTIFICATION FOR HIV

Reaching susceptible individuals, who have been exposed to disease, and then fashioning and implementing an appropriate intervention is at the very core of public health. With STDs, this effort begins with early identification of infected individuals through disease surveillance programs. Because HIV infection is not reportable in Massachusetts, early intervention must begin with the post-test counselor informing the infected person about follow-up and referral services including primary prevention and disease intervention. One intervention tool is called Partner Notification (PN), in which the sexual or needle-sharing partner is identified by the infected individual, informed of his/her exposure, and offered services to prevent, cure and manage infection. The Division of STD Prevention has been using PN as a tool to limit the number of cases of syphilis and gonorrhea for the past 50 years. We have extended this tool to HIV prevention for the past five years.

TENETS OF PARTNER NOTIFICATION

- * **PN IS ALWAYS VOLUNTARY** - No one is forced to use the service
- * **WE DO NOT NEED TO KNOW THE CLIENT'S NAME** - we only need the counselor or other health professional to assure us we are interviewing an infected person.
- * **NOTIFICATION IS ALWAYS FACE-TO-FACE, IN PRIVATE** - it is not performed by mail or over the phone - this is to assure to the greatest extent possible that the person being informed is the same as the partner who was named.
- * **PARTNERS ARE NOTIFIED OF POSSIBLE EXPOSURE** - not that they are infected.
- * **THE SOURCE OF INFORMATION IS NEVER REVEALED OR ACKNOWLEDGED**
- * **RECORDS ARE SAFEGUARDED** - no registry of HIV- infected people or their

partners is kept - all paperwork is destroyed by the counselor after notification is performed.

ADVANTAGES OF PN FOR THE HIV-INFECTED PERSON

* **Empowerment** - the HIV-infected person is taking an active role in their own care and in the care of those important to him/her.

ADVANTAGES OF HIV-PN FOR PARTNERS

* The partner(s) is informed of risks of which they may not be aware.

* HIV-PN is an opportunity for focused, one-to-one education to those at highest risk of infection, i.e., partners of HIV-infected people, with advice on how to continue expressing their sexuality while reducing future risks of exposure and infection

* The partner(s) is informed of risks to which they may be exposing an other partner(s)

* The partner(s) is offered counseling/medical care/social services to help determine whether they're infected and to help cope with such news - thus, HIV-PN is a gateway to services for those at highest risk of infection.

TO OBTAIN SERVICES

Call the Div. of STD Prevention in its central office or in any of its regional or clinic offices

Central Office: Boston (617) 983-6940

Northeast: (978) 851-7261 X 36,37 Janice or Ada

Southeast: (508) 947-1231, X 39,43 Wanda or Brenda

Central: (508) 854-3300 X 105 (Charlotte)

Western: (413) 784-4458 (Pat or Marla)

Pittsfield: (413) 447-2654 (Jackie)

National, County and Local Data

“STD ARE HIDDEN EPIDEMICS OF ENORMOUS HEALTH AND ECONOMIC CONSEQUENCE IN THE UNITED STATES”

“The Hidden Epidemic: Confronting Sexually Transmitted Diseases.”

National STD Summary

Year	All Syphilis	Rate 1/100000	Primary Secondary	Rate 1/100000	Gonorrhea	Rate 1/100000	Chlamydia	Rate 1/100000
1993	101335	39	26497	10	443278	172	407312	180
1994	81696	31	20627	8	418068	165	448984	193
1995	69320	26	16542	6	392662	149	478534	190
1996	52995	20	11387	4	325883	124	490080	195
1997	46537	18	8550	3	324901	123	526653	207
1998	37563	14	7037	3	337265	126	575867	224

Reported STD by County in Massachusetts

			1996			1997			1998	
County	Population	Syphilis	Gonorrhea	Chlamydia	Syphilis	Gonorrhea	Chlamydia	Syphilis	Gonorrhea	Chlamydia
Barnstable	186605									
Cases		6	31	103	5	20	88	1	21	94
Rate		3	17	55	3	11	47	1	11	50
Berkshire	139352									
Cases		1	42	51	1	27	109	2	66	218
Rate		0.7	30	37	0.7	19	78	1.4	47	156
Bristol	506325									
Cases		22	53	406	33	56	366	29	71	500
Rate		4	10	80	7	11	72	6	14	99
Dukes	11639									
Cases		0	2	2	0	0	5	0	2	14
Rates		0	17	17	0	0	43	0	17	120
Essex	670080									
Cases		76	196	647	89	118	579	58	123	729
Rate		11	29	97	13	18	86	9	18	109
Franklin	70092									
Cases		2	7	14	0	3	0	0	2	24
Rate		3	10	20	0	4	0	0	3	34
Hampden	456310									
Cases		62	527	1002	37	541	1274	23	412	1380
Rate		14	115	220	8	119	279	5	90	302
Hampshire	146568									
Cases		3	19	106	1	16	100	2	12	113
Rate		2	13	72	0.7	11	68	1.4	8	77
Middlesex	1398468									
Cases		113	239	927	131	175	950	101	235	1018
Rate		8	17	66	9	13	68	7	17	73
Nantucket	6012									
Cases		0	0	8	0	1	7	0	1	8
Rate		0	0	133	0	17	116	0	17	133
Norfolk	616087									

Cases		18	54	271	58	58	258	22	74	257
Rate		3	9	44	9	9	42	4	12	42
Plymouth	435276									
Cases		21	458	458	87	87	370	33	77	405
Rate		5	105	105	20	20	85	8	18	93
Suffolk	663906									
Cases		273	828	2154	910	910	2442	253	1007	2771
Rate		41	125	324	137	137	368	38	152	417
Worcester	709705									
Cases		37	71	631	64	64	757	48	155	832
Rate		5	10	89	9	9	109	7	22	117

TOWN 1998	COUNTY	POPULATION	SYPHILIS	RATE	GONORRHEA	RATE	CHLAMYDIA	RATE
Abington	Plymouth	13,817	*	*	*	*	<5	*
Acton	Middlesex	17,872	*	*	*	*	<5	*
Acushnet	Bristol	9,554	*	*	*	*	5	*
Adams	Berkshire	9,445	*	*	<5	*	<5	*
Agawam	Hampden	27,323	*	*	*	*	17	62
Alford	Berkshire	418	*	*	*	*	*	*
Amesbury	Essex	14,997	*	*	<5	*	8	53
Amherst	Hampshire	35,228	*	*	5	14	58	165
Andover	Essex	29,151	*	*	<5	*	12	41
Arlington	Middlesex	44,630	*	*	7	16	12	27
Ashburnham	Worcester	5,433	*	*	*	*	*	*
Ashby	Middlesex	2,717	*	*	*	*	*	*
Ashfield	Franklin	1,715	*	*	*	*	<5	*
Ashland	Middlesex	12,066	*	*	<5	*	<5	*
Athol	Worcester	11,451	*	*	*	*	6	52
Attleboro	Bristol	38,383	<5	*	8	21	63	164
Auburn	Worcester	15,005	<5	*	<5	*	6	40
Avon	Norfolk	4,558	*	*	*	*	*	*
Ayer	Middlesex	6,871	<5	*	*	*	<5	*
Barnstable	Barnstable	40,949	*	*	<5	*	33	81
Barre	Worcester	4,546	*	*	*	*	<5	*
Becket	Berkshire	1,481	*	*	*	*	<5	*
Bedford	Middlesex	12,996	*	*	<5	*	22	169
Belchertown	Hampshire	10,579	*	*	*	*	<5	*
Bellingham	Norfolk	14,877	*	*	<5	*	<5	*
Belmont	Middlesex	24,720	*	*	<5	*	<5	*
Berkley	Bristol	4,237	*	*	*	*	*	*
Berlin	Worcester	2,293	*	*	*	*	*	*
Bernardston	Franklin	2,048	*	*	*	*	*	*

Beverly	Essex	38,195	<5	*	<5	*	31	81
Billerica	Middlesex	37,609	6	16	<5	*	11	29
Blackstone	Worcester	8,023	*	*	<5	*	<5	*
Blandford	Hampden	1,187	*	*	*	*	<5	*
Bolton	Worcester	3,134	*	*	*	*	*	*
Boston	Suffolk	574,283	240	42	983	171	2,597	452
Bourne	Barnstable	16,064	*	*	*	*	6	37
Boxboro	Middlesex	3,343	*	*	<5	*	*	*
Boxford	Essex	6,266	*	*	*	*	<5	*
Boylston	Worcester	3,517	*	*	*	*	<5	*
Braintree	Norfolk	33,836	<5	*	6	18	10	30
Brewster	Barnstable	8,440	*	*	*	*	<5	*
Bridgewater	Plymouth	21,249	<5	*	<5	*	10	47
Brimfield	Hampden	3,001	*	*	*	*	<5	*
Brockton	Plymouth	92,788	23	25	55	59	292	315
Brookfield	Worcester	2,968	<5	*	*	*	<5	*
Brookline	Norfolk	54,718	<5	*	16	29	39	71
Buckland	Franklin	1,928	*	*	*	*	<5	*
Burlington	Middlesex	23,302	*	*	<5	*	7	30
Cambridge	Middlesex	95,802	17	18	41	43	206	215
Canton	Norfolk	18,530	*	*	*	*	<5	*
Carlisle	Middlesex	4,333	*	*	*	*	<5	*
Carver	Plymouth	10,590	*	*	<5	*	<5	*
Charlemont	Franklin	1,249	*	*	*	*	*	*
Charlton	Worcester	9,576	<5	*	<5	*	<5	*
Chatham	Barnstable	6,579	*	*	*	*	<5	*
Chelmsford	Middlesex	32,383	*	*	<5	*	9	28
Chelsea	Suffolk	28,710	<5	*	12	42	104	362
Cheshire	Berkshire	3,479	*	*	*	*	<5	*
Chester	Hampden	1,280	*	*	<5	*	<5	*
Chesterfield	Hampshire	1,048	*	*	*	*	*	*
Chicopee	Hampden	56,632	*	*	21	37	98	173
Chilmark	Dukes	650	*	*	*	*	*	*
Clarksburg	Berkshire	1,745	*	*	*	*	<5	*
Clinton	Worcester	13,222	*	*	<5	*	16	121
Cohasset	Norfolk	7,075	*	*	*	*	<5	*
Colrain	Franklin	1,757	*	*	*	*	*	*
Concord	Middlesex	17,076	<5	*	<5	*	<5	*
Conway	Franklin	1,529	*	*	<5	*	<5	*
Cummington	Hampshire	785	*	*	*	*	*	*
Dalton	Berkshire	7,155	*	*	<5	*	10	140
Danvers	Essex	24,174	<5	*	<5	*	5	21
Dartmouth	Bristol	27,244	<5	*	<5	*	10	37
Dedham	Norfolk	23,782	<5	*	<5	*	<5	*
Deerfield	Franklin	5,018	*	*	*	*	<5	*

Dennis	Barnstable	13,864	*	*	<5	*	7	50
Dighton	Bristol	5,631	*	*	<5	*	<5	*
Douglas	Worcester	5,438	*	*	*	*	7	129
Dover	Norfolk	4,915	*	*	*	*	*	*
Dracut	Middlesex	25,594	*	*	<5	*	11	43
Dudley	Worcester	9,540	*	*	<5	*	8	84
Dunstable	Middlesex	2,236	*	*	<5	*	<5	*
Duxbury	Plymouth	13,895	*	*	<5	*	5	36
East Bridgewater	Plymouth	11,104	*	*	*	*	<5	*
East Brookfield	Worcester	2,033	*	*	*	*	*	*
East Longmeadow	Hampden	13,367	*	*	<5	*	6	45
Eastham	Barnstable	4,462	*	*	*	*	*	*
Easthampton	Hampshire	15,537	*	*	*	*	<5	*
Easton	Bristol	19,807	*	*	<5	*	<5	*
Edgartown	Dukes	3,062	*	*	<5	*	5	163
Egremont	Berkshire	1,229	*	*	*	*	*	*
Erving	Franklin	1,372	*	*	*	*	*	*
Essex	Essex	3,260	*	*	*	*	<5	*
Everett	Middlesex	35,701	6	17	7	20	32	90
Fairhaven	Bristol	16,132	*	*	<5	*	11	68
Fall River	Bristol	92,703	<5	*	12	13	117	126
Falmouth	Barnstable	27,960	*	*	*	*	21	75
Fitchburg	Worcester	41,194	<5	*	9	22	104	252
Florida	Berkshire	742	*	*	*	*	<5	*
Foxboro	Norfolk	14,637	<5	*	<5	*	<5	*
Framingham	Middlesex	64,989	7	11	8	12	28	43
Franklin	Norfolk	22,095	*	*	<5	*	<5	*
Freetown	Bristol	8,522	*	*	*	*	5	59
Gardner	Worcester	20,125	*	*	*	*	11	55
Gay Head	Dukes	201	*	*	*	*	*	*
Georgetown	Essex	6,384	*	*	*	*	<5	*
Gill	Franklin	1,583	*	*	*	*	*	*
Gloucester	Essex	28,716	*	*	<5	*	11	38
Goshen	Hampshire	830	*	*	*	*	*	*
Gosnold	Dukes	98	*	*	*	*	*	*
Grafton	Worcester	13,035	*	*	<5	*	33	253
Granby	Hampshire	5,565	*	*	<5	*	<5	*
Granville	Hampden	1,403	*	*	*	*	<5	*
Great Barrington	Berkshire	7,725	*	*	*	*	7	91
Greenfield	Franklin	18,666	*	*	*	*	14	75
Groton	Middlesex	7,511	*	*	<5	*	*	*
Groveland	Essex	5,214	*	*	*	*	<5	*
Hadley	Hampshire	4,231	*	*	<5	*	<5	*
Halifax	Plymouth	6,526	*	*	*	*	<5	*
Hamilton	Essex	7,280	*	*	*	*	*	*

Hampden	Hampden	4,709	*	*	*	*	<5	*
Hancock	Berkshire	628	*	*	*	*	*	*
Hanover	Plymouth	11,912	*	*	<5	*	<5	*
Hanson	Plymouth	9,028	*	*	*	*	<5	*
Hardwick	Worcester	2,385	*	*	*	*	<5	*
Harvard	Worcester	12,329	*	*	<5	*	<5	*
Harwich	Barnstable	10,275	*	*	*	*	<5	*
Hatfield	Hampshire	3,184	*	*	<5	*	<5	*
Haverhill	Essex	51,418	<5	*	12	23	87	169
Hawley	Franklin	317	*	*	*	*	*	*
Heath	Franklin	716	*	*	*	*	*	*
Hingham	Plymouth	19,821	*	*	*	*	*	*
Hinsdale	Berkshire	1,959	*	*	*	*	*	*
Holbrook	Norfolk	11,041	*	*	<5	*	<5	*
Holden	Worcester	14,628	<5	*	<5	*	<5	*
Holland	Hampden	2,185	*	*	*	*	*	*
Holliston	Middlesex	12,926	*	*	*	*	*	*
Holyoke	Hampden	43,704	<5	*	29	66	176	403
Hopedale	Worcester	5,666	*	*	*	*	<5	*
Hopkinton	Middlesex	9,191	*	*	*	*	<5	*
Hubbardston	Worcester	2,797	*	*	*	*	<5	*
Hudson	Middlesex	17,233	*	*	*	*	<5	*
Hull	Plymouth	10,466	<5	*	<5	*	<5	*
Huntington	Hampshire	1,987	*	*	*	*	<5	*
Ipswich	Essex	11,873	*	*	<5	*	5	42
Kingston	Plymouth	9,045	*	*	<5	*	<5	*
Lakeville	Plymouth	7,785	*	*	*	*	<5	*
Lancaster	Worcester	6,661	*	*	*	*	<5	*
Lanesboro	Berkshire	3,032	*	*	*	*	<5	*
Lawrence	Essex	70,207	33	47	41	58	175	249
Lee	Berkshire	5,849	*	*	*	*	<5	*
Leicester	Worcester	10,191	*	*	*	*	10	98
Lenox	Berkshire	5,069	*	*	*	*	10	197
Leominster	Worcester	38,145	8	21	11	29	61	160
Leverett	Franklin	1,785	*	*	*	*	*	*
Lexington	Middlesex	28,974	<5	*	*	*	<5	*
Leyden	Franklin	662	*	*	*	*	*	*
Lincoln	Middlesex	7,666	*	*	*	*	<5	*
Littleton	Middlesex	7,051	*	*	*	*	<5	*
Longmeadow	Hampden	15,467	*	*	*	*	<5	*
Lowell	Middlesex	103,439	25	24	62	60	271	262
Ludlow	Hampden	18,820	*	*	18	96	36	191
Lunenburg	Worcester	9,117	<5	*	*	*	<5	*
Lynn	Essex	81,245	10	12	29	36	212	261
Lynnfield	Essex	11,274	*	*	*	*	<5	*

Malden	Middlesex	53,884	<5	*	15	28	65	121
Manchester	Essex	5,286	*	*	<5	*	<5	*
Mansfield	Bristol	16,568	*	*	<5	*	7	42
Marblehead	Essex	19,971	<5	*	<5	*	6	30
Marion	Plymouth	4,496	*	*	<5	*	*	*
Marlboro	Middlesex	31,813	<5	*	<5	*	19	60
Marshfield	Plymouth	21,531	*	*	*	*	<5	*
Mashpee	Barnstable	7,884	*	*	<5	*	<5	*
Mattapoissett	Plymouth	5,850	*	*	<5	*	<5	*
Maynard	Middlesex	10,325	*	*	*	*	<5	*
Medfield	Norfolk	10,531	*	*	*	*	<5	*
Medford	Middlesex	57,407	*	*	11	19	24	42
Medway	Norfolk	9,931	*	*	*	*	<5	*
Melrose	Middlesex	28,150	*	*	<5	*	22	78
Mendon	Worcester	4,010	*	*	*	*	*	*
Merrimac	Essex	5,166	*	*	<5	*	<5	*
Methuen	Essex	39,990	<5	*	11	28	35	88
Middleboro	Plymouth	17,867	<5	*	<5	*	<5	*
Middlefield	Hampshire	392	*	*	*	*	<5	*
Middleton	Essex	4,921	<5	*	<5	*	<5	*
Milford	Worcester	25,355	*	*	<5	*	10	39
Millbury	Worcester	12,228	*	*	<5	*	7	57
Millis	Norfolk	7,613	*	*	*	*	*	*
Millville	Worcester	2,236	*	*	*	*	<5	*
Milton	Norfolk	25,725	<5	*	6	23	9	35
Monroe	Franklin	115	*	*	*	*	*	*
Monson	Hampden	7,776	*	*	*	*	<5	*
Montague	Franklin	8,316	*	*	<5	*	<5	*
Monteray	Berkshire	805	*	*	*	*	*	*
Montgomery	Hampden	759	*	*	*	*	*	*
Mt Washington	Berkshire	135	*	*	*	*	*	*
Nahant	Essex	3,828	*	*	*	*	<5	*
Nantucket	Nantucket	6,012	*	*	<5	*	8	133
Natick	Middlesex	30,510	*	*	5	16	14	46
Needham	Norfolk	27,557	*	*	<5	*	8	29
New Ashford	Berkshire	192	*	*	*	*	*	*
New Bedford	Bristol	99,922	16	16	30	30	200	200
New Braintree	Worcester	881	*	*	*	*	<5	*
New Marlboro	Berkshire	1,240	*	*	*	*	*	*
New Salem	Franklin	802	*	*	*	*	*	*
Newbury	Essex	5,623	*	*	*	*	*	*
Newburyport	Essex	16,317	*	*	<5	*	12	74
Newton	Middlesex	82,585	<5	*	6	7	42	51
Norfolk	Norfolk	9,270	<5	*	*	*	<5	*
North Adams	Berkshire	16,797	*	*	8	48	27	161

North Andover	Essex	22,792	*	*	<5	*	9	39
North Attleboro	Bristol	25,038	*	*	<5	*	5	20
North Brookfield	Worcester	4,708	*	*	<5	*	<5	*
North Reading	Middlesex	12,002	*	*	*	*	<5	*
Northampton	Hampshire	29,289	<5	*	<5	*	13	44
Northboro	Worcester	11,929	<5	*	*	*	<5	*
Northbridge	Worcester	13,371	*	*	*	*	6	45
Northfield	Franklin	2,838	*	*	*	*	<5	*
Norton	Bristol	14,265	*	*	<5	*	9	63
Norwood	Norfolk	28,700	*	*	<5	*	8	28
Oak Bluffs	Dukes	2,804	*	*	*	*	8	285
Oakham	Worcester	1,503	*	*	*	*	<5	*
Orange	Franklin	7,312	*	*	*	*	*	*
Orleans	Barnstable	5,838	*	*	*	*	<5	*
Otis	Berkshire	1,073	*	*	*	*	<5	*
Oxford	Worcester	12,588	*	*	<5	*	6	48
Palmer	Hampden	12,054	*	*	<5	*	11	91
Paxton	Worcester	4,047	*	*	*	*	5	124
Peabody	Essex	47,039	<5	*	<5	*	28	60
Pelham	Hampshire	1,373	*	*	*	*	*	*
Pembroke	Plymouth	14,544	*	*	*	*	5	34
Pepperell	Middlesex	10,098	*	*	*	*	<5	*
Peru	Berkshire	779	*	*	*	*	*	*
Petersham	Worcester	1,131	*	*	*	*	*	*
Phillipston	Worcester	1,485	*	*	*	*	*	*
Pittsfield	Berkshire	48,622	<5	*	52	107	138	284
Plainfield	Hampshire	571	*	*	*	*	*	*
Plainville	Norfolk	6,871	*	*	*	*	<5	*
Plymouth	Plymouth	45,608	<5	*	<5	*	24	53
Plympton	Plymouth	2,384	*	*	*	*	<5	*
Princeton	Worcester	3,189	*	*	*	*	<5	*
Provincetown	Barnstable	3,561	<5	*	16	449	7	197
Quincy	Norfolk	84,985	7	8	13	15	62	73
Randolph	Norfolk	30,093	<5	*	<5	*	17	56
Raynham	Bristol	9,867	*	*	*	*	6	61
Reading	Middlesex	22,539	*	*	*	*	6	27
Rehoboth	Bristol	8,656	*	*	*	*	<5	*
Revere	Suffolk	42,786	7	16	12	28	63	147
Richmond	Berkshire	1,677	*	*	*	*	*	*
Rochester	Plymouth	3,921	*	*	*	*	<5	*
Rockland	Plymouth	16,123	*	*	<5	*	5	31
Rockport	Essex	7,482	*	*	*	*	<5	*
Rowe	Franklin	378	*	*	*	*	*	*
Rowley	Essex	4,452	*	*	*	*	*	*
Royalston	Worcester	1,147	*	*	*	*	*	*

Russell	Hampden	1,594	*	*	*	*	<5	*
Rutland	Worcester	4,936	*	*	*	*	<5	*
Salem	Essex	38,091	<5	*	5	13	52	137
Salisbury	Essex	6,882	*	*	*	*	7	102
Sandisfield	Berkshire	667	*	*	<5	*	<5	*
Sandwich	Barnstable	15,489	*	*	*	*	<5	*
Saugus	Essex	25,549	<5	*	<5	*	11	43
Savoy	Berkshire	634	*	*	*	*	*	*
Scituate	Plymouth	16,786	*	*	*	*	<5	*
Seekonk	Bristol	13,046	*	*	<5	*	13	100
Sharon	Norfolk	15,517	*	*	<5	*	<5	*
Sheffield	Berkshire	2,910	*	*	*	*	*	*
Shelburne	Franklin	2,012	*	*	*	*	<5	*
Sherborn	Middlesex	3,989	*	*	*	*	*	*
Shirley	Middlesex	6,118	*	*	<5	*	<5	*
Shrewsbury	Worcester	24,146	*	*	<5	*	9	37
Shutesbury	Franklin	1,561	*	*	*	*	*	*
Somerset	Bristol	17,655	*	*	*	*	*	*
Somerville	Middlesex	76,210	18	24	23	30	72	94
South Hadley	Hampshire	16,685	*	*	*	*	5	30
Southampton	Hampshire	4,478	*	*	*	*	*	*
Southboro	Worcester	6,628	*	*	<5	*	8	121
Southbridge	Worcester	17,816	*	*	<5	*	<5	*
Southwick	Hampden	7,667	*	*	*	*	<5	*
Spencer	Worcester	11,645	<5	*	<5	*	8	69
Springfield	Hampden	156,983	21	13	333	212	971	619
Sterling	Worcester	6,481	*	*	*	*	<5	*
Stockbridge	Berkshire	2,408	*	*	*	*	*	*
Stoneham	Middlesex	22,203	*	*	<5	*	6	27
Stoughton	Norfolk	26,777	<5	*	<5	*	27	101
Stow	Middlesex	5,328	*	*	*	*	*	*
Sturbridge	Worcester	7,775	*	*	*	*	5	64
Sudbury	Middlesex	14,358	*	*	<5	*	*	*
Sunderland	Franklin	3,399	*	*	*	*	*	*
Sutton	Worcester	6,824	*	*	<5	*	<5	*
Swampscott	Essex	13,650	*	*	<5	*	6	44
Swansea	Bristol	15,411	*	*	<5	*	7	45
Taunton	Bristol	49,832	6	12	<5	*	28	56
Templeton	Worcester	6,438	*	*	*	*	6	93
Tewksbury	Middlesex	27,266	*	*	<5	*	6	22
Tisbury	Dukes	3,120	*	*	*	*	*	*
Tolland	Hampden	289	*	*	*	*	*	*
Topsfield	Essex	5,754	*	*	*	*	*	*
Townsend	Middlesex	8,496	<5	*	*	*	<5	*
Truro	Barnstable	1,573	<5	*	*	*	<5	*

Tyngsboro	Middlesex	8,642	*	*	*	*	<5	*
Tyringham	Berkshire	369	*	*	*	*	*	*
Upton	Worcester	4,677	*	*	*	*	<5	*
Uxbridge	Worcester	10,415	*	*	*	*	<5	*
Wakefield	Middlesex	24,825	*	*	<5	*	5	20
Wales	Hampden	1,566	*	*	*	*	*	*
Walpole	Norfolk	20,212	*	*	*	*	<5	*
Waltham	Middlesex	57,878	<5	*	11	*	43	74
Ware	Hampshire	9,808	*	*	*	*	18	184
Wareham	Plymouth	19,232	*	*	*	*	17	88
Warren	Worcester	4,437	*	*	*	*	<5	*
Warwick	Franklin	740	*	*	*	*	*	*
Washington	Berkshire	615	*	*	*	*	*	*
Watertown	Middlesex	33,284	<5	*	5	15	14	42
Wayland	Middlesex	11,874	*	*	*	*	<5	*
Webster	Worcester	16,196	*	*	<5	*	5	31
Wellesley	Norfolk	26,615	*	*	*	*	17	64
Wellfleet	Barnstable	2,493	*	*	*	*	<5	*
Wendell	Franklin	899	*	*	*	*	*	*
Wenham	Essex	4,212	*	*	*	*	*	*
West Boylston	Worcetser	6,611	<5	*	*	*	<5	*
West Bridgewater	Plymouth	6,389	*	*	*	*	<5	*
West Brookfield	Worcester	3,532	*	*	*	*	*	*
West Newbury	Essex	3,421	*	*	*	*	<5	*
West Springfield	Hampden	27,537	*	*	<5	*	18	65
West Stockbridge	Berkshire	1,483	*	*	*	*	*	*
West Tisbury	Dukes	1,704	*	*	*	*	<5	*
Westboro	Worcester	14,133	<5	*	*	*	7	50
Westfield	Hampden	38,372	*	*	<5	*	28	73
Westford	Middlesex	16,392	*	*	<5	*	<5	*
Westhampton	Hampshire	1,327	*	*	*	*	*	*
Westminster	Worcetser	6,191	*	*	*	*	<5	*
Weston	Middlesex	10,200	*	*	*	*	<5	*
Westport	Bristol	13,852	*	*	<5	*	<5	*
Westwood	Norfolk	12,557	*	*	*	*	*	*
Weymouth	Norfolk	54,063	*	*	6	11	22	41
Whately	Franklin	1,375	*	*	*	*	*	*
Whitman	Plymouth	13,240	*	*	<5	*	<5	*
Wilbraham	Hampden	12,635	<5	*	<5	*	<5	*
Williamsburg	Hampshire	2,515	*	*	*	*	<5	*
Williamstown	Berkshire	8,220	*	*	*	*	5	61
Wilmington	Middlesex	17,651	*	*	*	*	10	57
Winchendon	Worcester	8,805	*	*	*	<5	7	80
Winchester	Middlesex	20,267	*	*	*	*	<5	*
Windsor	Berkshire	770	*	*	*	*	*	*

Winthrop	Suffolk	18,127	*	*	<5	*	18	99
Woburn	Middlesex	35,943	<5	*	<5	*	12	33
Worcester	Worcester	169,759	26	15	101	59	422	249
Worthington	Hampshire	1,156	*	*	*	*	*	*
Wrentham	Norfolk	9,006	*	*	<5	*	<5	*
Yarmouth	Barnstable	21,174	*	*	*	*	8	38